Introduction

Interim prosthesis are an essential part of fixed prosthodontic treatment. Patients must be provided with an interim restoration from initial tooth preparation until the definitive prosthesis is placed. An interim prosthesis is defined as ‘‘a fixed or removable prosthesis, designed to enhance aesthetics, stabilization or function for a limited period of time, after which it is to be replaced by a definitive prosthesis. Often such prostheses are used to assist in determination of the therapeutic effectiveness of a specific treatment plan or the form and function of the planned definitive prosthesis’’. The term ‘‘provisional’’ prosthesis is often used as a synonym for ‘‘interim’’ prosthesis. The requirements of an interim restoration are essentially the same as for the definitive restoration, with the exception of durability and shade.

The main aims of interim prostheses are to protect pulp and sedate prepared abutments, evaluate parallelism of abutments, and immediately replace missing teeth. It also helps to prevent migration of abutments, improve aesthetics, provide an environment conducive to periodontal health, evaluate and reinforce the patient’s oral home care.

Interim prosthesis provide a matrix for the retention of periodontal surgical dressings; stabilize mobile teeth during periodontal therapy and subsequent repair. In case of ongoing orthodontic treatment, to anchor orthodontic brackets during minor tooth movement and to aid in developing and evaluating an occlusal scheme before the final prosthesis is made. Finally, this prosthesis allow evaluation of vertical dimension, phonetics, and masticatory function.

Cement is a binding element or agent used as a substance to make objects adhere to each other, or something serving to firmly unite. A material that, on

hardening, will fill a space or bind adjacent objects. ***Cementation*** is the process of a attaching parts by means of cement: attaching a restoration to natural teeth by means of a cement.

Luting agents are used to ensure the stability of fixed prosthesis throughout their serviceable lifespan. They can be interim luting agents or definitive luting agents. Cementing a restoration on an interim basis is advised so that the patient and dentist can assess its appearance and function over a time longer than during a single visit. Interim cement is mixed with a little petrolatum to avoid the difficulty in removing the interim restoration. An interim cemented restoration may become loose during function. If recementation is of the dislodged restoration is not done promptly, caries can develop very rapidly. Interim cementation should not be undertaken unless the patient is given clear instructions about the objectives of the procedure, the intended duration of trial cementation and the importance of returning promptly if an abutment loosens.

Studies have shown that interim cement application may affect the shear bond strength of definitive restoration luted with resin cement. A durable bond depends on the chemical composition of the adhesive agent and the surfaces that are connected.

The present study is aimed to determine the most favourable interim cement for resin luting cement based on analysing their shear bond strength values.

Aims & Objectives

The purpose of the present study is to estimate the most favourable interim cement for resin luting cement based on the obtained shear bond strength values. The study is also aimed at determining & comparing the shear bond strength values:-

- After zinc oxide Eugenol interim cement application on dentin.
- After Eugenol free interim cement application on dentin.
- After resin based interim cement application on dentin.

Methodology

The roots of 60 sound, recently extracted (up to 7 days) human maxillary first premolar teeth were embedded in acrylic resin blocks up to the cemento enamel junction. Their occlusal surfaces were abraded with silicon carbide paper (180 to 600 grit) in a polishing machine until a flat dentin surface was exposed. The smear layer formed was expected to be uniform for all teeth. Three different types of interim cements to be used. A conventional Zinc Oxide Eugenol interim cement, Eugenol free interim cement and a resin based interim cement. After interim cement application on dentin surface, samples received an interim restoration fabricated from an autopolymerising acrylic resin (9×9×5 mm) simulating an interim restoration.

These restorations and remaining interim cement were removed after 1 week, using a dental excavator, and the preparation was cleaned. For definitive cementation, Zirconia blocks were bonded with the respective resin cement to the occlusal surface of the premolars after the described procedures. The Zirconia blocks were airborne-particle abraded with 50-µm aluminum oxide particles for 10 seconds at a distance of 20 mm, cleaned in an ultrasonic bath for 5 minutes, and air-dried. The respective resin cement was applied and the resin block was seated on the treated dentin under finger pressure. Excess material was removed and the cement light activated for 40 seconds. Permanent cemented specimens were allowed to dry for 30 min before they were stored in 100% humidity for 24 h at room temperature. The bond strengths of the respective groups

were then tested, 24 h after definitive cementation, using the universal testing machine with a crosshead speed of 0.5 mm/min until failure.

Result

a) For Group I (Control Group), the mean maximum load applied is 171 N and the mean shear bond strength obtained is 5.0 MPa.

b) For Group II (Zinc Oxide Eugenol Interim cement applied on samples), the mean maximum load applied is 30 N and the mean shear bond strength obtained is 0.68 MPa.

c) For Group III (Eugenol free interim cement applied on samples), the mean maximum load applied is 50 N and the mean shear bond strength obtained is 1Mpa.

d) For Group IV (Resin based interim cement applied on samples), the mean maximum load applied is 91 N and the mean shear bond strength obtained is 2 MPa

Group I, Control group has the highest Shear bond strength value compared to all other groups.

Summary and Conclusion

- The results of the present study shows that the newer resin based interim cement showed better values than the Zinc oxide eugenol and eugenol free interim cements. The use of interim cement clearly affects the bonding of resin cement to dentin

- Group IV (Resin based interim cement) samples showed better bond strength compared to remaining two interim cements.

- Group III (Non eugenol interim cement) samples showed better result than Group II (Zinc oxide eugenol interim cement) samples.
- By using proper interim cement, the long-term durability of the definitive prosthesis can be achieved.